use of red glass for obtaining approximately monochromatic light. This is a factor of fundamental importance when temperatures of the order of 3000° C. have to be measured by means of pyrometers calibrated on the basis of Wien's law to represent the distribution of energy in the spectrum of a "full radiator." The "disappearing filament" type of pyrometer has been greatly developed in recent years at the N.P.L. and elsewhere, and it would appear that, in time, it will supplant most of the other types now in use for high-temperature measurements.

Thermometry is covered by a comprehensive article written by Mr. W. F. Higgins. A detailed account is given of the N.P.L. equipment for thermometer testing, together with a complete discussion of the mercurial thermometer. No consideration is given to vapour-pressure thermometers. During the war many thousands per week were made for use on aircraft, and they are also being extensively fitted to motor-car radiators at the present time. Doubtless the new mercury-in-steel transmitting thermometers, which have been successfully developed and are coming into wide use, will receive a longer notice in a future edition.

Mr. G. S. Baker writes on ship resistance, Prof. Horace Lamb contributes mathematical articles on Fourier's series, etc., Dr. A. W. Porter treats of thermal conductivity, and Mr. Jakeman deals with the measurement of pressure.

We regret that we have not space to notice the numerous short articles scattered throughout the volume, some of which are intended to supplement the longer articles.

There is an excellent name-index. The references are plentiful, and appear to have been carefully checked. The only slip which we have noticed is on page 1025, the Physical Society modestly confining itself to Proceedings, not Transactions, as implied by the writer. We notice that the names of Mr. Whetham (Phase Rule) and Miss Austin (Units of Measurement) have been omitted from the list of contributors on p. vii.

The printers have done their work well, and the publishers are to be congratulated on their enterprise and the general "turn-out" of the book. It was inevitable that a book of 1000 or more pages of this type should be expensive. The pity of it is that the price will put it out of the reach of so many students. It is true that they may have recourse to the nearest library, but the book is such that one would like to see every senior student of the subject with his own copy. Some of the articles will be a revelation to him, bearing as they do little resemblance in substance and treatment to the majority of the present-day text-books.

The division of the Dictionary into volumes on a subject-basis, and the fact that individual volumes are purchasable, are features greatly to be commended. Perhaps in the future it may prove possible to extend the system and divide the Dictionary into, say, double the number of smaller volumes, each confined to one main branch of the subject, and proportionately less costly. The volumes would be lighter to handle, and the formidable task of keeping so large a work abreast of modern science would be much facilitated.

G. W. C. KAYE.

Position of Agriculture in India.

Agricultural Progress in Western India. By G. Keatinge. Pp. xii + 253. (London: Longmans, Green and Co., 1921.) 6*s*. net.

AGRICULTURAL conditions in India are such that any estimate of progress must be largely indirect. The bulk of the land is farmed in small holdings by peasants who keep no accounts, and sell their surplus products in local markets which render no statistical returns; again, the value of export crops, such as cotton, is subject to wide fluctuations owing to the erratic rainfall. But, by a consideration of other factors, such as the area under cultivation, changes in land values and rentals, irrigation schemes, and the standard of living, there is definite evidence of progress. Mr. Keatinge has spent thirty years in the midst of agricultural problems in the Bombay Presidency, and in this very interesting book he sets out his estimate of the progress that has been made, the obstacles to further advancement, and a proposed future policy.

With regard to the obstacles in the way of further advancement, the most serious one is the Hindu law of inheritance, by which each male member of a family is entitled to an equal share of the family property. This results, not only in the division of farms into uneconomic units, but in a further subdivision into scattered plots—a process reminiscent of the old three-field system in England. Another fundamental difficulty is that cattle cannot be bred and kept solely for profit, owing to their significance in the Hindu religion. They are of inefficient types, used of necessity in an uneconomic manner, and are more of a hindrance than a help to the struggling farmer. As an illustration of the difficulty of introducing improvements which do not clash seriously with the social and religious habits of the cultivators, the author considers the use of irrigation water. It appears that, financially, most irrigation canals are unsuccessful owing to the slow manner in which these facilities are

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taken up. This is due to the small number of men who have the necessary capital, skill, and energy to engage in the more intensive type of cultivation necessary on irrigated land.

In certain matters of technique, such as improvements in cultivation and rotations, the application of manures and the use of better seed, considerable advances have been effected. This is largely due to the investigations made at the experimental farms of the Agricultural Service.

In one of the appendices to the book the author outlines a draft bill to enable landowners to correct the excessive division of holdings, and he supports his case by full details of typical instances of subdivision, and by comparison with the remedial measures taken in other countries where the same conditions have arisen.

The book is essentially a plea for a specified course of legislative action, and therefore may be to some extent controversial, especially at the present time; but the facts are put forward in an eminently fair manner, and the author's treatment and discussion of them constitute an exceedingly interesting and useful account of agricultural conditions in an important region of India. B. A. KEEN.

Prehistory for the Schoolroom.

(1) *Everyday Life in the Old Stone Age.* Written and illustrated by M. and C. H. B. Quennell. (The Everyday Life Series, I.) Pp. x+109. (London: B. T. Batsford, Ltd., n.d.) 5*s.* net.

(2) *The World-Story of* 3,000,000,000 (*?*) *Years.* By J. Reeves. Pp. 16. (London: P. S. King and Son, Ltd., 1922.) 2*s.* 6*d.* net.

(1) THIS is a delightful book. It ought to be in every schoolroom; but the elders will want to borrow it and enjoy it in the evenings. The line drawings are masterpieces of well directed imagination. That on p. 48 shows a Mousterian family between the thin stems of the woodland and their cave; the big brother, just for fun, is frightening a little girl, who clings to her mother's back as she looks after the fire; an elder sister, sitting near him, checks him by a timely touch from her leg—her foot is just as ready as her hand. The 130 square cm. of the drawing—the authors justly use the metric scale—are full of life and incident; we should like to see the curtain rising on its realisation as the first scene of a folk-drama.

The clever guesses at the appearance in profile of successive types of man, from Pithecanthropus to the Magdalenian, should be supplemented by a few drawings of the actual skulls. There is no ugly suggestion nowadays about a skull, and readers would then see clearly on what the conclusions rest. The picture of a small valley-glacier producing a moraine-girdle is crude, and does little to explain the conditions found by earliest man in Europe. The absurdly small thickness assigned to Cainozoic strata in the table is sanctioned by British Museum guides, and is derived from the narrow cult of the London Basin by geologists in southern England. But we turn to the text and the living illustrations, to the proud dignity of *Cervus giganteus*, unconscious of his vulgar little enemy in the rear, and to the sleepy hippopotamus about to fall upon the stakes; then once more we cordially thank the authors.

(2) So much is problematic when we seek to summarise "the world-story" that we doubt the wisdom of drawing up charts which simulate those derived from written history. Mr. Reeves's book is, however, very useful to the teacher; but it necessarily contains much on which we await further information. By reserving the theromorphs, for example, for the Trias, the author is able to state that the Permian reptiles were not at first clearly differentiated from amphibians. The marvel, however, lies in the rapid rise in Permian times of a mammalo-reptilian type. The hypotheses of the earth's origin do not fit well with tables showing in detail the "periods" of man's occupation of the globe. We have the "solar planetary epoch," the Carboniferous "period," and later the La Tène "period." Unless the geological section is greatly extended, undue emphasis is thrown on the analysis by archæologists of the progress of early man in the European area. Prof. Sollas's estimates, made in 1909, are wisely taken as a basis for suggesting, by thickness of strata, the relative lengths of geological periods. The author's references to literature should aid the schoolmaster who attempts to deal with man as "a part of Nature." But how are other forms of teaching, in Kentucky, in Middlesex, and elsewhere, to be reconciled with this high ideal?

G. A. J. C.

Aesthetics.

(1) *Harmonism and Conscious Evolution.* By Sir Charles Walston (Waldstein). Pp. xvi+463. (London: J. Murray, 1922.) 21*s.* net.

(2) *The Poetic Mind.* By F. C. Prescott. Pp. xx+308. (New York: The Macmillan Co.; London: Macmillan and Co. Ltd., 1922.) 9*s.* net.

(1) HARMONISM, whatever its attraction as a theory, has chosen very unharmonious terms for its expression. Sir Charles Walston's theory is, in his own words, that conscious evolution in the

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